



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,211	06/30/2003	Masakazu Nakano	030475	7674
23850	7590	09/13/2005	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			PAK, SUNG H	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,211

Applicant(s)

NAKANO ET AL.

Examiner

Sung H. Pak

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-17 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicants' amendment filed 6/06/2005 has been entered. Newly added limitations presented in the amendment change the scope of the pending claims, and a new ground of rejection is provided in this office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gleason et al (US 4,557,557) in view of Yang et al (US 6,676,307 B1).

Gleason discloses an optical device with limitations set forth in the claims, except it does not explicitly teach the use of a method and a means for calculating the amount of heat energy (electric arc) to be applied, or the amount of deformation to be carried out *in advance*.

Specifically, Gleason discloses an optical device with all the limitations set forth in the claims including: a method of forming an optical fixed attenuator and an optical fixed attenuator formed by two optical fiber ends that are abutted and heated by an electric arc (column 2 lines 60-61), such that the core of the fibers at the end portions (and only the end portions) are deformed (Fig. 3; column 3 lines 29-30: mode field diameter of the fibers at the end portions are inherently changed due to the change in core width); wherein the amount of deformation of the fiber core (and consequently the mode field diameter) is determined to achieve a desired splice loss (column 3 lines 30-31); wherein the amount of deformation to be carried out is determined on the basis of a correlation between the amount of deformation and the resulting splice loss (column 3 lines 5-12); wherein the amount of heating is adjustable so as to achieve desired amount of deformation and therefore desired amount of splice loss (column 2 lines 60-66); subsequently forming the fusion splice via cooling the abutted fiber ends (column 1 lines 45-48).

Regarding claims 5, Gleason discloses an apparatus that produces such a fiber attenuator (Fig. 1)

Regarding claims 2-3, 5, 7, although Gleason does not explicitly call the electric arc function of the heat source as a “cleaning arc”, “preheat” or “prearc”, the electric arc as disclosed in the reference inherently performs the “melting of the fibers end faces” function and “removing dust adhered on end surface” function. Therefore, the electric arc of Gleason fully anticipates the “cleaning arc” or “prearc” limitations of the claims in the instant application.

Yang, on the other hand, explicitly teaches a method of forming a fiber splice attenuator and a fiber splice attenuator thus formed, comprising a calculating means for predicting and determining, *in advance*, the amount of electric arc (and thus the amount of fiber deformation) to be applied in order to achieve a desired level of attenuation (column 2 lines 35-68; column 13 line 1- column 19 line 8). Such feature is considered advantageous and desirable over the prior art because it allows for consistent fiber splicing that is less dependent on machine operator, machine condition, and environmental conditions (column 1 lines 46-24).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Gleason device to have a calculating means for determining the amount of electric arc and thus the amount of fiber deformation in advance, before the application of the electric arc.

Claims 5-8, 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gleason et al (US 4,557,557) in view of Yang et al (US 6,676,307 B1) as applied to claims above, and in further view of Esmaeili (US 6,097,426).

Gleason, in view of Yang, renders all the claimed limitations obvious as discussed above, except it discloses starting the electric arc after the two fiber ends abut each other and moving one end closer to the other end, *instead of* starting the electric arc while the two fiber ends are apart and moving the ends to meet each other, as claimed in the instant application.

On the other hand, Esmaeili explicitly teaches a method and apparatus for splicing optical fiber ends, wherein an electric arc is started and applied to fiber ends while they are closely

Art Unit: 2874

proximate each other but apart (column 8 lines 17-41). Such feature is considered advantageous and desirable in the art because it allows for effective cleaning of fiber ends and softening of fiber ends for efficient fiber splicing (column 8 lines 17-41).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Gleason to have electric arc started while fibers are in close proximity as taught by Esmaeili.

Response to Arguments

Applicant's arguments filed 6/06/2005 have been fully considered but they are not persuasive.

Claims 1-4:

Starting on page 12, it is argued that “**Gleason** describes a desired optical loss value, and does not describe calculating mode field diameter.”

The examiner respectfully submits that, in view of the claim amendment, a new ground of rejection is provided with respect to claim 1 and its dependent claims. Nevertheless, Gleason reference explicitly teaches deforming the fiber core to achieve desired splice loss. Since mode field diameter is a function of, inter alia, fiber core diameter, Gleason inherently teaches changing the mode field diameter to achieve the desired splice loss.

Claims 5-17:

In view of the newly amended limitations, the ground of rejection has been changed in this office action. Applicants' arguments have been carefully studied, however, they are deemed moot in view of the new ground of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Sung H. Pak', with a long horizontal flourish extending to the right.

Sung H. Pak
Patent Examiner
Art Unit 2874

sp